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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,292	07/11/2003	Ihl Hyun Cho	29936/39481	4373

4743 7590 05/18/2004

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EXAMINER	
LINDSAY JR, WALTER LEE	

ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/618,292	CHO, IHL HYUN	
	Examiner	Art Unit	
	Walter L. Lindsay, Jr.	2812	

-- The MAILING DATE of this communication app ars on the cover sheet with th corr spond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-5 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3 and 5 is/are rejected.

7)☒ Claim(s) 4 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office action is in response to the application filed on 7/11/2003.

Currently, claims 1-5 are pending.

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek et al. (U.S. Patent No. 6,703,278, filed on 7/30/2002) in view of Wolf et al. (Silicon Processing for the VLSI Era, Vol. 1-Process Technology, copyright 1986).

Wieczorek et al. substantially shows the method as claimed, in Figs. 5a-5f and 6 and corresponding text, as: forming an isolating film (4) on a given region of a semiconductor substrate (1) to define a first region (2) and a second region (3)(col. 9, lines 63-66); forming a first oxide film (5) on the entire structure and then removing the first oxide film from the second region using a photoresist film pattern (6) (col. 10, lines

1-4); implementing an oxidization process to form a second oxide film (3') on the semiconductor substrate in the second region (col. 10, lines 13-24); forming a polysilicon film on the entire structure and then patterning the polysilicon film (10) to form gate electrodes in the first and second regions, respectively (col. 10, lines 46-54), and implementing an impurity ion implantation process (n+, p+) to form junction regions at given regions on the semiconductor substrate (col. 10, lines 46-54)(claim 1). Wieczorek also shows that, the first oxide film is formed thicker than the second oxide film (col. 10, lines 46-54) (claim 2). Additionally Wieczorek shows that, the photoresist film (6) is formed using an I-line series photoresist material (col. 8, lines 26-33)(claim 3).

Wieczorek lacks anticipation only in not explicitly teaching that: 1) the photoresist film pattern is removed using a solvent (claim 1).

Wolf et al. teaches the use of Organic strippers being used to remove the resist layer, consisting of either phenol-based strippers or phenol-free based strippers (p. 518). An example of such an Organic stripper is Ecostrip.

Ecostrip is a trademark of Allied Chemical and is a known solvent.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method shown in Wieczorek by using the organic strippers discussed in Wolf to remove the photoresist of Wieczorek, with the motivation that using such removal methods are well known in the art and would fall under conventional removal methods.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek et al. (U.S. Patent No. 6,703,278, filed on 7/30/2002) in view of Wolf et al.

(Silicon Processing for the VLSI Era, Vol. 1-Process Technology, copyright 1986) as applied to claim 1 above, and further in view of Lin et al. (U.S. Patent No. 6,734,055, filed on 11/15/2002).

Wieczorek et al. and Wolf et al. show the method substantially as claimed and as described in the preceding paragraphs.

Wieczorek and Wolf lack anticipation only in not explicitly teaching that: 1) the polysilicon film is formed without applying a vacuum and is formed using SiH_4 gas or Si_2H_6 gas at a temperature ranging from about 580°C to about 630°C.

Lin et al. teaches polysilicon growth in a similar semiconductor device, where the growth of a polysilicon layer is formed with silicon source SiH_4 using LPCVD at a temperature between about 300 to 700° C (col. 6 lines 11-21).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method shown in Wieczorek and Wolf, by forming the polysilicon film using SiH_4 source using a LPCVD method at a temperature between about 300 to 700°C as taught by Lin, with the motivation that both the combination and Lin attempt to improve breakdown voltage. Additionally the polysilicon would be formed as to minimize defects.

Allowable Subject Matter

5. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: the prior art, either singly or in combination fails to anticipate or render obvious, the limitations of:

...wherein the solvent includes any one of ethylcellsoluve acetate (ECA), methylamyl ketone (MAK), ethyl pyruvate (EP), ethyl lactate (EL), 3-methylmethoxy propionate (MMP), propyleneglycomonomethyl ether (PGME), propyleneglycol-monomethylether acetate (PGMEA) and ethoxyethyl propionate (EEP), as required by claim 4.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter L. Lindsay, Jr. whose telephone number is (571) 272-1674. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John F Niebling can be reached on (571) 272-1679. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WLL
May 13, 2004

John F. Niebling
Supervisory Patent Examiner
Technology Center 2800